

What is claimed is:

1. A method of measuring hydrocarbon content in a gas, comprising:
 - measuring a plurality of individual hydrocarbon concentrations in a gas sample;
 - determining a total concentration based on the plurality of individual concentrations;
 - identifying an occurrence of water interference in the gas sample; and
 - determining whether the occurrence of water interference exceeds an interference level.
2. The method of claim 1 wherein the first determining step comprises:
 - grouping the individual hydrocarbon concentrations into a plurality of classes;
 - summing the individual hydrocarbon concentrations within each of the plurality of classes to yield a plurality of class concentrations; and
 - adding the class concentrations to yield the total concentration.
3. The method of claim 1 wherein the second determining step determines that the amount of an occurrence of water interference exceeds an interference level, and comprising the additional step of relating the total

concentration to water contamination.

4. The method of claim 1 wherein the second determining step determines whether an omni-state of water amount exceeds an interference level, and further comprising the step of reporting at least one state of matter of water interference condition.

5. The method of claim 1 wherein the measuring step comprises using an open path emission sensor to detect the intensity of a plurality of infrared spectra in the gas sample.

6. The method of claim 1 wherein the measuring step comprises measuring by at least one of non-dispersive infrared detection, dispersive infrared detection, non-dispersive ultraviolet detection, dispersive ultraviolet detection, tunable diode laser, non-dispersive visible detection and dispersive visible detection.

7. The method of claim 1 wherein the measuring step comprises measuring by at least one of differential optical absorption detection and gas filter correlation detection.

8. The method of claim 1 comprising the additional step of scaling the total concentration to account for optical overlap of individual hydrocarbon species.

9. The method of claim 1 comprising the additional step of adjusting at least one of the individual hydrocarbon and CO₂ concentrations to

account for one or more ambient conditions.

10. The method of claim 1 comprising the additional step of adjusting the total hydrocarbon concentration to account for one or more ambient conditions.

11. A system for measuring hydrocarbon content in a gas, comprising:

an emissions sensor capable of detecting a plurality of individual hydrocarbons in a gas sample;

a processor in communication with said emissions sensor; and

a computer-readable carrier in communication with said processor, said computer-readable carrier containing program instructions that instruct the processor to perform the steps of:

receiving data corresponding to a plurality of individual hydrocarbon concentrations in a sample;

determining a total concentration based on the plurality of individual concentrations;

measuring an occurrence of water interference in the gas sample; and

determining whether the occurrence of water interference corresponds to an interference condition.

12. The system of claim 11 wherein the emissions sensor comprises

an open path emissions sensor or a closed path emissions sensor.

13. The system of claim 11 wherein the program instructions that instruct the processor to perform the first determining step comprise instructions to:

group the individual hydrocarbon concentrations into a plurality of classes;

sum the individual hydrocarbon concentrations within each of the plurality of classes to yield a plurality of class concentrations; and

add the class concentrations to yield the total concentration.

14. The system of claim 11 further comprising an ambient condition sensor that receives ambient condition data.

15. The system of claim 14 wherein the program instructions further instruct the processor to adjust the total concentration in response to the ambient condition data.

16. The system of claim 11 further comprising a transmitter that is capable of transmitting data corresponding to the total concentration.

17. The system of claim 11 wherein the emissions sensor and the processor are linked by a communications link that allows data corresponding to a plurality of individual hydrocarbon concentrations to be transmitted by the emissions sensor to the processor via the communications link.

18. The system of claim 11 wherein the program instructions

further instruct the processor to, when an omni-state of water occurrence corresponds to an interference condition, relate the total concentration to at least one state of matter of water interference contamination.

19. A system for measuring hydrocarbon content in a gas, comprising:

a means for detecting a plurality of individual hydrocarbons in a gas sample;

a means for determining a total concentration based on the plurality of individual concentrations;

a means for identifying an occurrence of water interference in the gas sample; and

a means for determining whether said occurrence of water interference correspond to an interference condition.

20. The system of claim 19 wherein the means for determining a total concentration comprises:

a means for grouping the individual hydrocarbon concentrations into a plurality of classes;

a means for summing the individual hydrocarbon concentrations within each of the plurality of classes to yield a plurality of class concentrations; and

a means for adding the class concentrations to yield the total

concentration.

21. The system of claim 19 further comprising:

a means for detecting one or more ambient conditions; and

a means for adjusting gas measurements to account for one or more ambient conditions.

22. The system of claim 19 further comprising:

a means for scaling gas measurements to account for multiple counting of individual hydrocarbon species;

a means for adjusting at least one of the individual hydrocarbon and CO₂ concentrations to account for one or more ambient conditions; and

a means for adjusting the total hydrocarbon concentration to account for one or more ambient conditions.

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